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published in

Journal of Child Psychology and Psychiatry
2006

DOI (link to publisher)

[10.1111/j.1469-7610.2006.01616.x](https://doi.org/10.1111/j.1469-7610.2006.01616.x)

document version

Publisher's PDF, also known as Version of record

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citation for published version (APA)

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Terrible ones? Assessment of externalizing behaviors in infancy with the Child Behavior Checklist

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Background: This study investigated the occurrence, cross-informant agreement, 1-year stability, and context characteristics of externalizing behaviors in 12-month-old children, as compared to 24- and 36-month-olds. **Method:** In a general population sample of 786 12-month-olds, 720 24-month-olds, and 744 36-month-olds, the CBCL/1½–5 was obtained from mothers and fathers and again one year later for a subsample of 307 children. Mothers of 1,831 children also provided complete data on child, mother, and family characteristics. **Results:** Over three-fourths of the externalizing behaviors occurred in more than 10% of 12-month-olds, over one-third of the items in more than 25%. For almost all externalizing behaviors, the occurrence was significantly lower in 12-month-olds compared to 24- and 36-month-old children. Mother–father agreement and 1-year stability of externalizing behaviors in 12-month-old children were significant, but generally somewhat lower than in 24- and 36-month-olds. Context characteristics were related to externalizing behaviors in 12-month-olds as well as in older children. Some associations were less pronounced in 12-month-old children, but the overall pattern of correlates was similar across age groups. **Conclusions:** The results of this study show that externalizing behaviors in 12-month-old children merit further research and can be assessed with the CBCL in a valid way. **Keywords:** Externalizing behaviors, Child Behavior Checklist, toddlers, infancy, prevalence, stability, correlates.

From a developmental perspective, a child's first birthday marks more than just the passing of one year on the calendar. During that year, the child has gone from lying down to rapidly advancing mobility, from diffuse to increasingly differentiated emotions, and from basic reflexes to goal-directed activity (Sroufe, 1995). Several of these developmental advances point to the relevance of examining the emergence of externalizing behaviors in 12-month-olds. Not only do 12-month-old children experience emotions such as frustration and anger, their cognitive and physical advances allow them to undertake a variety of coordinated goal-directed actions. These accomplishments are all crucial ingredients for the performance of externalizing behaviors, such as noncompliance, temper tantrums, and hitting others. However, very little is known about the prevalence rates, stability, and correlates of externalizing behaviors in 12-month-olds. The present study aims to investigate these issues in order to explore the nature of externalizing behaviors in 12-month-old children, as compared to children aged 24 and 36 months.

Recently, some studies have provided evidence for the existence of externalizing behaviors in 12-month-old children. Tremblay and colleagues (1999) showed that the age of onset of physical aggression lies around the age of 12 months, and that by age 17 months, approximately 80% of children will have

performed one or more physically aggressive behaviors. Unfortunately, because of the retrospective study design, reliable prevalence rates of aggression in children younger than 17 months were not available. Carter, Briggs-Gowan, Jones, and Little (2003) confirmed the existence of aggression in children aged 12 to 17 months, and further showed that defiance and impulsivity also occur in this age group. However, it is unclear to what extent these results apply to the youngest children in this age range.

While there is some evidence regarding the existence of externalizing behaviors in 12-month-olds, little is known about interparent agreement about these behaviors. In studies with 2- and 3-year-olds, correlations between mothers' and fathers' reports of child externalizing problems are around .65 (Achenbach & Rescorla, 2000; Koot, Van den Oord, Verhulst, & Boomsma, 1997). A second important issue is the question whether these behaviors are merely transient or indicative of future (mal) adaptation. We did not find any studies that reported longitudinal stability of externalizing behaviors in children younger than 24 months of age. Studies in older toddlers report 1-year stability coefficients of .70 (Achenbach, Edelbrock, & Howell, 1987) and .66 (Achenbach & Rescorla, 2000). It is unclear whether these findings regarding interparent agreement and

longitudinal stability also apply to children younger than 24 months of age.

Another step in unraveling the nature of 12-month-olds' externalizing behaviors is examining how these behaviors relate to child and family functioning. The development of externalizing problems in older children is best explained by a combination of both child and environmental characteristics (Campbell, 2002). *Child factors* that have been associated with externalizing problems in young children in recent research include difficult temperament (Mathiesen & Sanson, 2000) and physical health problems (Najman, Bor, Andersen, O'Callaghan, & Williams, 2000). *Parent characteristics* related to externalizing behavior in young children in recent studies include feelings of parenting inefficacy (Carter, Briggs-Gowan, & Davis, 2004), a harsh and controlling parenting style, daily stresses, and low marital quality (Belsky, Woodworth, & Crnic, 1996), as well as maternal psychological health problems (Najman et al., 2000), lack of social support – in particular dissatisfaction with the level of social support – and low parental age (Anselmi, Piccinini, Barros, & Lopes, 2004). In addition, *family factors* associated with young children's externalizing problems include low levels of parental education and the presence of siblings (e.g., Anselmi et al., 2004). The use of day care has become increasingly common in this age group, and recent research has found that quantity of child care (considered an extra-familial influence) is associated with externalizing problems (NICHD, 2003).

We might expect both similarities and differences between correlates of externalizing behaviors in 12-month-olds and those found in older children. Finding similar associations would provide support for the construct validity of externalizing behaviors at this age. Such findings would show that the meaning of externalizing behavior in 12-month-olds is reflected in the same well-established pattern of associated factors in older children. Variations in the (strength of) associations between context characteristics and externalizing behaviors may, however, also be expected. Developmental differences between 12-month-olds and older children may be responsible for diverging patterns in different age groups. The developmental psychopathology perspective (e.g., Sroufe & Rutter, 1984) emphasizes the transaction between prior adaptation, maturational change, and subsequent developmental challenges. Consistent with this view, transactional models (e.g., Sameroff & Chandler, 1975) underline the multi-directional influences between child behavior and its caregiving environment. Older children have interacted with their environment for a longer period of time and the impact of (maladaptive) behavior patterns may have been more extensive than in younger children, and lead to more pronounced associations between context and externalizing behaviors in older children as compared to those found in 12-month-

olds. Another relevant mechanism involves the concept of developmental issues. Sroufe (1979) describes development as organized around a series of developmental issues, indicating which developmental tasks a child must acquire (e.g., exploration and mastery) and what caregiving behavior is accordingly required (e.g., providing a secure base). Developmental issues alternate in narrow intervals in infancy and toddlerhood. The child experiences rapid developmental advances in cognitive, linguistic, and motor skills, and parents need to continuously tune their caregiving behavior to their developing child. The qualitative changes in child and parental functioning in terms of salient developmental issues at several points in time during the first few years of life may result in different context factors associated with externalizing behavior at different ages.

One of the reasons that studies reporting data on the prevalence of externalizing behaviors in children younger than 2 years are so scarce has been the lack of suitable research instruments for the measurement of these behaviors in this age group. Most of the available questionnaires measuring behavior in very young children consist of very broad categories of functioning and do not differentiate between externalizing and other types of behaviors (e.g., Mouton-Simien, McCain, & Kelley, 1997; Squires, Bricker, & Potter, 1997). Tremblay et al. (1999) used only a short questionnaire consisting of physically aggressive behaviors rated on a 3-point scale by parents. The recently developed ITSEA (Infant-Toddler Social and Emotional Assessment) is aimed at children between ages 12 and 36 months and includes externalizing problems (Briggs-Gowan & Carter, 1998; Carter et al., 2003). However, publications so far have not reported on the prevalence and reliability of problem behavior in the youngest age group of 12-month-olds.

The most widely used questionnaire for the assessment of child behavior problems is the Achenbach System of Empirically Based Assessment (ASEBA), which includes the well-known Child Behavior Checklist (CBCL) for different age groups (e.g., Achenbach & Rescorla, 2000, 2001). Recently, the CBCL for ages 2 to 3 years (CBCL/2–3; Achenbach, 1992) was revised to include a wider age range, resulting in the CBCL for ages 1½ to 5 years (CBCL/1½–5; Achenbach & Rescorla, 2000). The fact that the ASEBA is widely used and is specifically tailored to assess problem behavior across the life span makes it a prime candidate for the exploration of assessing externalizing behaviors in children as young as 12 months of age, with the possibility of another downward extension.

The aim of the present study was, first, to examine the occurrence, mother–father agreement, and 1-year stability of externalizing behaviors in 12-month-old children, using the CBCL/1½–5. The study also included 24- and 36-month-old children,

to compare results across age groups. Consistent with the studies by Tremblay et al. (1999) and Carter et al. (2003), we expected externalizing behaviors to occur in 12-month-olds, but less often than in 24- and 36-month-old children. Based on studies in somewhat older children, we expected to find moderate to high interparent agreement and 1-year stability of externalizing behavior in 12-month-olds. Second, we examined which child, mother, and family characteristics were associated with externalizing behaviors in 12-month-old children, and whether these associations were similar to those found in 24- and 36-month-olds.

Method

The SCRIPT study

The Dutch SCRIPT study (Screening and Intervention of Problem behavior in Toddlerhood) is a collaboration between Leiden University (Centre for Child and Family Studies) and the Vrije Universiteit Amsterdam (Department of Developmental Psychology). The study investigates the effectiveness of an early intervention program aimed at reducing externalizing behaviors in 12- to 36-month-old children by enhancing maternal sensitivity and adequate discipline strategies. The data for the current paper were derived from the general population screening phase and the 1-year follow-up.

Sample and procedure

Addresses of children aged approximately 12 months, 24 months, and 36 months were obtained from the municipal registers of several cities and towns in the western region of the Netherlands. Because the screening phase of the SCRIPT study was designed to provide participants for the intervention study, sample homogeneity regarding cultural background (Dutch) was important. Therefore, children with both a non-Dutch surname and a non-Dutch first name were not included in the target sample. By mail, parents of 4,615 eligible children received two booklets with questionnaires, one for each parent. Data were obtained from the primary parents of 2,408 children (response rate 52%), as well as from the second caregivers in 87% of the cases. Unfortunately we were not able to collect detailed information on non-participating families, but there were no child age or child sex differences between responding and non-responding families (respectively $p = .11$ and $p = .38$).

For the present paper, only those children were included for whom the primary parent was the mother (biological or otherwise) and the second caregiver (if present) was the father (biological or otherwise). Three children aged 15 months were excluded in order to obtain a more homogeneous age group of children aged approximately 12 months. These selection criteria resulted in a sample of 2,250 children: 786 12-month-old children ($M = 11.71$ months, $SD = 1.00$, range = 10–14), 720 24-month-olds ($M = 23.80$ months, $SD = .99$, range = 22–27), and 744 36-month-olds

($M = 35.77$ months, $SD = 1.09$, range = 33–40). The living situation of almost all children involved both biological parents (95%) and over half of the children had siblings (60%). The majority of the parents had a high educational level (one or both parents with Bachelor's or Master's degree in 65% of the sample).

Because of the large sample size, we used a critical p -value of $p < .01$ throughout this paper in order to prevent capitalization on chance and on too small effect sizes.

Statistically significant, but small differences between age groups were found for parental educational level, $F(2, 2247) = 5.13$, $p < .01$, partial $\eta^2 = .005$. Post hoc tests showed that parents of 36-month-olds had a lower educational level than parents of 12-month-olds ($p < .01$). In addition, older children had siblings more often than younger children, overall $\chi^2(2, N = 2,250) = 121.40$, $p < .01$, partial $\eta^2 = .054$. There were no significant differences between age groups regarding living situation ($p = .40$).

A follow-up was conducted approximately 1 to 3 years after the screening phase, consisting of follow-up data from the primary parents of 60% of the screening sample ($n = 1,351$); in 79% of the cases data from the second caregivers were also obtained. The follow-up sample for the present paper was based on the following criteria: (1) We selected only those children for whom data were available from both parents at both times of assessment, to avoid informant effects on stability, $n = 1,029$; (2) children who had received the study's intervention between the screening and follow-up ($n = 81$) were excluded to avoid interference of potential intervention effects; (3) to avoid unclear results because of large differences in follow-up intervals (range = 8–41 months), we only included children for whom the follow-up interval was approximately 12 months ($n = 307$, $M = 12.09$, $SD = 1.40$, range = 10–14 months). This selection resulted in a follow-up sample of 307 children: 114 12-month-olds, 94 24-month-olds, and 99 36-month-olds.

Parents of the children in the follow-up sample had a higher educational level than the unselected children, $F(1, 2248) = 30.25$, $p < .01$, partial $\eta^2 = .013$; and children in the follow-up sample all lived with both biological parents, while some of the unselected children did not $\chi^2(2, N = 2,250) = 17.58$, $p < .01$, partial $\eta^2 = .007$. Differences in initial level of externalizing behaviors were present, but effect sizes were very small: the selected follow-up sample had significantly lower scores on Externalizing Problems (average of mothers and fathers: $M = 10.39$, $SD = .43$ versus $M = 12.30$, $SD = .43$, $F(1, 1963) = 16.39$, $p < .01$, partial $\eta^2 = .008$), on Oppositional (average of mothers and fathers: $M = 6.38$, $SD = .29$ versus $M = 7.53$, $SD = .12$, $F(1, 1963) = 13.29$, $p < .01$, partial $\eta^2 = .007$), on Aggressive (average of mothers and fathers: $M = 2.03$, $SD = .11$ versus $M = 2.36$, $SD = .05$, $F(1, 1963) = 7.58$, $p < .01$, partial $\eta^2 = .004$), as well as on Overactive (average of mothers and fathers: $M = 1.98$, $SD = .09$ versus $M = 2.41$, $SD = .04$, $F(1, 1963) = 17.79$, $p < .01$, partial $\eta^2 = .009$). There were no differences between the follow-up sample and the unselected children regarding child age ($p = .68$) and presence of siblings ($p = .33$).

For the correlational analyses only those children were included for whom we had complete data on all child, mother, and family measures that were investigated, resulting in a subsample of 1,831 children (638 12-month-olds, 589 24-month-olds, and 604 36-month-old children). There were no significant differences between children in this subsample and children excluded because of missing data regarding age ($p = .94$), presence of siblings ($p = .03$), and level of externalizing problems ($p = .91$). Parents in this subsample had a higher educational level, $F(1, 2248) = 25.27$, $p < .01$, partial $\eta^2 = .013$; and children in the subsample were more often living with both biological parents, $\chi^2(1, N = 2,250) = 407.73$, $p < .01$, $\eta^2 = .068$.

Instruments

Scale scores were computed by summing item scores, except for the temperament measure, for which a scale score was computed by averaging item scores. Because we feel that externalizing behaviors in very young children can not be readily labeled as problematic, we use the term externalizing 'behaviors' rather than externalizing 'problems' throughout this paper. However, because the CBCL syndromes are officially labeled 'problem' scales, we use the term 'problems' when referring to this instrument.

Externalizing behaviors. The Child Behavior Checklist for ages 1 1/2 to 5 (CBCL/1½–5; Achenbach & Rescorla, 2000) was used to assess externalizing behaviors and was obtained from both mothers and fathers. Parents indicated whether their child displayed any of the 100 behavioral descriptions in the last 2 months on a 3-point scale (0 *not true*, 1 *somewhat or sometimes true*, and 2 *very true or often true*). The previous version of the CBCL/1½–5 (the CBCL/2–3) was tested in a Dutch population of 2- to 3-year-olds by Koot et al. (1997) who identified a broadband Externalizing Problems syndrome (31 items) consisting of three narrowband syndromes: Oppositional (17 items), Aggressive (9 items), and Overactive (5 items). Internal consistencies exceeded .75 for all externalizing syndromes. In addition, Koot et al. reported good reliability and validity. Because the CBCL has not been previously used for children under 18 months old, we performed confirmatory factor analyses (LISREL, ULS) to find out if the factor structure as found for 2- to 3-year-olds by Koot et al. (1997) was also applicable for 12-month-old children. Results for a one-factor solution (broadband Externalizing Problems) showed acceptable to close fit: RMSEA = .042 (95% confidence interval: .038–.045), AGFI = .95, and RMR = .089. For the 3-factor solution (Oppositional, Aggressive, Overactive), the fit indices showed similar results: RMSEA = .036 (95% CI: .033–.040), AGFI = .95, and RMR = .083. We concluded that the same factor structure as found for older children was applicable to our sample of 12-month-old children.

In 12-month-old children, internal consistencies (Cronbach's alphas) for mother- and father-reported CBCLs were high for the broadband syndrome Externalizing Problems (.89/.88) and the subsyndrome Oppositional (.86/.84), and acceptable for Aggressive (.65/.68). For Overactive, alphas were mediocre (.54/.60). Alpha levels were similar for the older age groups,

ranging from .67 (father-reported Overactive in 24-month-olds) to .91 (mother-reported Externalizing Problems in 36-month-olds).

Difficult temperament. Child temperament (as perceived by the mother) was measured with the Infant Characteristics Questionnaire (ICQ; Bates, Freeland, & Lounsbury, 1979). The ICQ was translated into Dutch and found reliable by Kohnstamm (1984). The Dutch ICQ contains 33 items, describing concrete behaviors in well-defined situations. The items were rated on a 5-point scale, ranging from 0 *not true* to 4 *true*. Because the ICQ was used in combination with the aforementioned CBCL/1½–5, five items in the ICQ were discarded due to content-overlap between items of both questionnaires. Next, a one-component analysis was carried out in each age group to derive a general difficultness factor (more information can be found in the electronic appendix on the publisher's website). The difficultness factor consisted of 14 items in 12-month-old children, 18 items in 24-month-olds, and 16 items in 36-month-old children. Cronbach's alphas were .68, .76, and .75, respectively.

Child physical health problems. The number of physical health problems was assessed by asking mothers to indicate whether seven indicators did or did not apply to their child (e.g., physical handicap, chronic disease).

Parenting efficacy. The extent to which mothers characterized themselves as competent caregivers was measured with the Parental Efficacy Questionnaire (Caprara, personal communication, 1998; Van IJzendoorn, Bakermans-Kranenburg, & Juffer, 1999). The questionnaire consists of 20 items rated on a 5-point scale (ranging from –2, meaning *I am certainly not capable of doing this*, to +2, meaning *I am certainly capable of doing this*). Cronbach's alphas were .85 for 12- and 24-month-old children, and .86 for 36-month-olds.

Authoritarian control. The Dutch translation of the Child Rearing Practices Report (questionnaire-form) was used to assess mothers' authoritarian style in childrearing (CRPR; Block, 1965; Dekovic, Janssens, & Gerris, 1991). We used 11 of the 13 items measuring authoritarian control (see Dekovic, 1989), since 2 items were not applicable to our age groups ('I do not allow my child to say bad things about his teacher' and 'I believe children should not have secrets from their parents'). Mothers were asked to rate statements regarding strict supervision, frequent use or threat of physical punishment, verbal reprimands, and prohibitions on a 5-point scale (0 *not true* – 4 *true*). Cronbach's alphas were .67 in 12-month-olds and .68 in 24- and 36-month-old children.

Daily hassles. To measure daily hassles, mothers were asked to rate the intensity of 45 indices of potentially stressful events on a 5-point scale (0 *no hassle* – 4 *big hassle*). The Parenting Daily Hassles questionnaire (Crnic & Greenberg, 1990) contains 20 items asking about typical everyday events in parenting and parent-child interaction, e.g., hard to find a babysitter, trouble at dinnertime. In addition to parenting daily hassles, 25

items asked about daily hassles related to life in general (Kanner, Coyne, Schaffer, & Lazarus, 1981), e.g., money problems, trouble at work. In the present study, Cronbach's alphas were .87, .85, and .82 for parenting daily hassles, and .88, .88, and .87 for general daily hassles, in 12-, 24-, and 36-month-old children respectively.

Marital discord. A subscale of the Dutch Family Problems Questionnaire (Koot, 1997) was used to assess marital discord. Mothers indicated on a 3-point scale whether five statements about their partner relationship were 0 *not true*, 1 *somewhat or sometimes true*, or 2 *true or often true*. In the present study, Cronbach's alphas were .63, .69, and .64, for respectively 12-, 24-, and 36-month-olds.

Well-being. Mothers rated their sense of well-being on the Cantrill Ladder (Cantrill, 1965), indicating how they felt in the past month. This self-anchoring single item indicator was scored on a scale from 0 to 10 (*very poor-very good*). The Cantrill Ladder has been reported to have good validity, stability, and reasonable reliability (Atkinson, 1982).

Satisfaction with social support. Mothers' satisfaction with different sources of social support was measured with a social support questionnaire based on the Social Support Scale (Westgeest, 1985). Mothers were asked to indicate whether or not they received social support in 10 areas (e.g., friends, family, community) and subsequently rated their satisfaction with the support on a 5-point scale (0 *not satisfied* – 4 *very satisfied*). Internal consistencies for this satisfaction scale were .78 in both 12- and 36-month-old children, and .79 in 24-month-olds.

Sociodemographic data. Several questions were asked to obtain information on sociodemographic factors, e.g., maternal age, parental educational level (defined by the highest educational level of both parents on a 5-point scale, ranging from 1 *elementary school* to 5 *Master's degree*), number of siblings, and childcare arrangements (defined by the quantity of child care per week: 0 *no childcare arrangements* to 4 *more than 20 hours per week in child care*).

Results

Occurrence of externalizing behaviors

The occurrence of externalizing behaviors was examined using primary caregiver data (i.e., mothers

in this study), since they spend the most time with their child. Results of individual items showed that the majority of items occurred in more than 10% of the 12-month-olds (percentages for all CBCL-items are reported in the electronic appendix on the publisher's website). Over one-third of the items occurred in more than 25% of the 12-month-old children. The five most prevalent items were 'Quickly shifts activity' (66%), 'Demands must be met' (55%), 'Can't wait' (51%), 'Wants attention constantly' (52%), and 'Can't sit still' (47%). Only five items occurred in less than 10% of the 12-month-old children. Analyses revealed that 12-month-olds scored significantly lower than 24- and/or 36-month-olds on 27 of the 31 items (F -values significant at $p < .01$).

Table 1 shows the mean scores for the mother-reported CBCL externalizing syndromes for each age group. To test for age differences, ANOVAs and post hoc Tukey tests were performed using residual CBCL syndrome scores to correct for age differences in parental educational level and presence of siblings. For all externalizing syndromes, significant age differences were found, with differences being largest for Oppositional and smallest for Overactive. Post hoc analyses revealed that for all syndromes, 12-month-olds had significantly lower scores than 24- and 36-month-olds. A significant sex by age interaction was only found for the Aggressive syndrome, $F(2, 2244) = 6.25$, $p < .01$, partial $\eta^2 = .006$, with smaller sex differences in younger than in older children.

Interparent agreement and 1-year stability

The agreement between mother and father reports of child externalizing problem behaviors is summarized in Table 2. For 12-month-olds, the results show significant mother-father agreement for all externalizing syndromes, ranging from .39 to .49. For Aggressive and Overactive, the agreement between mothers and fathers was significantly higher in 36-month-old children than in 12-month-old children. For Aggressive, interparent agreement was also higher in 24-month-olds than in 12-month-old children.

For the longitudinal analyses, the average of mother- and father-reported syndrome scores was

Table 1 Mother-reported mean CBCL externalizing syndrome scores, for ages 12 months, 24 months, and 36 months

Age in months (<i>N</i>)	12 (786) <i>M</i> (<i>SD</i>)	24 (720) <i>M</i> (<i>SD</i>)	36 (744) <i>M</i> (<i>SD</i>)	<i>F</i>	Age effects		
					12 \neq 24	12 \neq 36	24 \neq 36
Externalizing	8.57 (6.98)	13.97 (8.49)	15.16 (9.33)	124.52	*	*	–
Oppositional	4.82 (4.66)	8.49 (5.51)	9.73 (6.19)	149.32	*	*	*
Aggressive	1.58 (1.79)	3.06 (2.57)	2.90 (2.48)	79.33	*	*	–
Overactive	2.18 (1.68)	2.42 (1.88)	2.52 (2.06)	11.33	*	*	–

Note. Age effects were investigated using ANOVAs and post hoc Tukey tests, with residual CBCL syndrome scores to correct for age differences in parental educational level and presence of siblings. All F -values were significant at $p < .01$. Significant post hoc tests are indicated by * ($p < .01$).

Table 2 Mother–father agreement and one-year stability for externalizing CBCL syndromes in each age group

Age in months (<i>n</i>)	Mother–father agreement						One-year stability					
	Pearson <i>r</i>			Age effects (<i>Z</i> _{diff})			Pearson <i>r</i>			Age effects (<i>Z</i> _{diff})		
	12 (683)	24 (635)	36 (647)	12 ≠ 24	12≠36	24 ≠ 36	12 (114)	24 (94)	36 (99)	12 ≠ 24	12 ≠ 36	24 ≠ 36
Oppositional	.49	.51	.51	.48	.49	.00	.46	.61	.82	1.50	4.73*	3.06*
Aggressive	.39	.55	.51	3.74*	2.74*	1.00	.48	.60	.73	1.20	2.91*	1.61
Overactive	.40	.47	.58	1.56	4.34*	2.72*	.36	.63	.72	2.58*	3.81*	1.14
Externalizing	.48	.54	.56	1.47	2.00	.51	.45	.65	.82	2.05	4.82*	2.61*

Note. All correlations were significant at $p < .01$. Significant age differences are indicated by * ($p < .01$).

used, to minimize informant effects on stability figures. Correlations between scores of both assessments were computed for the mother–father composite scores to investigate the 1-year stability of externalizing problems in young children (Table 2). Stability coefficients for 12-month-old children ranged from .36 to .48. For all externalizing syndromes, stabilities of 12-month-olds were significantly lower compared to 36-month-old children. For Overactive, the 1-year-stability in 12-month-olds was also lower than in 24-month-olds.

Context characteristics

All context characteristics were reported by the mother. To avoid informant effects, the mother–father composite scores were used and analyses were repeated for father-reported externalizing behaviors. Correlations among child, mother, and family variables were lower than .50 in all age groups, except for the correlation between parenting daily hassles and general daily hassles, which ranged from .60 ($p < .01$) in 12-month-olds to .64 ($p < .01$) in 36-month-olds (correlations between all

context characteristics are reported in the electronic appendix on the publisher's website). In Table 3 means and standard deviations of child, mother, and family characteristics are presented for each age group. To test for age differences ANOVAs and post hoc Bonferroni tests were performed. The table shows significant age differences for over half of all variables. For variables showing significant age differences, means were always lower for 12-month-olds than for older children, except for difficult temperament on which mean scores were higher in 12-month-olds than in older children. Parenting daily hassles, maternal age, and number of siblings were lower in 24-month-olds than in 36-month-olds as well.

To examine correlates of externalizing behavior in each age group, correlations between the externalizing composite score and all child, mother, and family characteristics were computed (Table 4). Nearly all correlations were significant in 12-month-old children. Only associations with child physical health problems, parenting efficacy, parental educational level, and quantity of child care did not reach statistical significance. This pattern was very similar in 24- and 36-month-old children. All asso-

Table 3 Differences between 12-, 24-, and 36-month-old children on child, mother, and family characteristics

Age in months	12 (<i>n</i> = 638)		24 (<i>n</i> = 589)		36 (<i>n</i> = 604)		Age differences	
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	<i>F</i> -value	
Child								
Externalizing behaviors	8.22	5.78	13.45	7.36	14.55	7.96	143.15	12 < 24 36*
Difficult temperament	1.55	.55	1.27	.50	1.35	.53	47.62	12 > 24 36*
Physical health problems	.50	1.00	.55	.97	.44	.94	(2.10)	–
Mother								
Parenting efficacy	21.66	7.74	24.11	7.69	25.01	7.76	31.29	12 < 24 36*
Authoritarian control	20.38	6.18	21.79	6.04	21.80	6.01	11.34	12 < 24 36*
Parenting daily hassles	11.10	8.61	13.40	8.59	15.03	8.14	34.09	12 < 24 < 36*
General daily hassles	13.40	10.16	13.91	10.50	13.92	9.90	(.54)	–
Marital discord	1.20	1.42	1.46	1.64	1.53	1.56	8.01	12 < 24 36*
Well-being	7.43	1.40	7.20	1.46	7.28	1.43	(4.00)	–
Satisfaction social support	32.24	4.99	31.76	4.94	32.07	4.78	(1.51)	–
Age	32.67	4.15	33.76	4.00	34.91	4.11	46.93	12 < 24 < 36*
Family								
Parental educational level	4.07	.99	4.00	1.03	3.90	1.06	(4.43)	–
Number of siblings	.62	.79	.84	.79	1.00	.76	36.54	12 < 24 < 36*
Quantity of child care	2.51	1.50	2.50	1.52	2.72	1.31	(4.28)	–

Note. Results from post hoc tests were only reported when *F*-values were significant at $p < .01$, which was true for over half of all *F*-values, except for those printed between brackets. Significant post hoc tests are indicated by * ($p < .01$).

Table 4 Correlations and standardized beta-weights for child, mother, and family characteristics in relation to externalizing behaviors

Age in months	Externalizing behaviors Pearson correlation (<i>r</i>)			Age differences	Externalizing behaviors Unique β		
	12 (<i>n</i> = 638)	24 (<i>n</i> = 589)	36 (<i>n</i> = 604)		12 (<i>n</i> = 638)	24 (<i>n</i> = 589)	36 (<i>n</i> = 604)
<i>R</i> ²					.38*	.50*	.51*
Child							
Difficult temperament	.55*	.66*	.65*	<i>ns</i>	.49*	.54*	.53*
Physical health problems	.07	.15*	.05	<i>ns</i>	.01	.03	.03
Mother							
Parenting efficacy	-.08	-.32*	-.23*	12 < 24†	.02	-.11*	-.03
Authoritarian control	.15*	.14*	.18*	<i>ns</i>	.08	.06	.12*
Parenting daily hassles	.27*	.42*	.46*	12 < 36†	.13*	.21*	.14*
General daily hassles	.29*	.24*	.31*	<i>ns</i>	.09	-.05	.00
Marital discord	.14*	.18*	.23*	<i>ns</i>	.07	.06	.03
Well-being	-.14*	-.16*	-.25*	<i>ns</i>	.06	.01	-.07
Satisfaction social support	-.14*	-.15*	-.22*	<i>ns</i>	.03	.08	-.03
Age	-.16*	-.18*	-.17*	<i>ns</i>	-.12*	-.08	-.10*
Family							
Parental educational level	-.02	-.12*	-.23*	12 < 36†	-.04	-.06	-.08
Number of siblings	-.16*	-.04	-.06	<i>ns</i>	-.13*	-.05	-.02
Quantity of child care	.02	-.00	-.07	<i>ns</i>	.02	.09	-.01

Note. **p* < .01. Bonferroni corrections were applied when testing for age differences over 13 constructs, resulting in †*p* < .0008.

ciations were in the expected directions. Fisher's *Z*-tests were performed to test for age differences in the strength of associations between context characteristics and externalizing behaviors. Because of the large number of statistical analyses, we applied Bonferroni corrections for each set of analyses (i.e., for each age comparison). Age differences in the strength of associations with externalizing behaviors were found for three variables. The association between externalizing behaviors and parenting efficacy was lower in 12-month-old children than in 24-month-olds ($Z_{\text{dif}} = 4.26$, $p < .0008$). The association between externalizing behaviors and parenting daily hassles was lower in 12-month-old children than in 36-month-old children ($Z_{\text{dif}} = 3.73$, $p < .0008$), as was the association with parental educational level ($Z_{\text{dif}} = 3.72$, $p < .0008$). Post hoc, the analyses were repeated for father-reported externalizing behaviors and the overall results were similar.

To test whether the pattern of independent associations was similar across age groups, three sets of hierarchical multiple regression analyses were performed (from proximal to distal: first entering child characteristics, then maternal, and finally family variables). In Table 4 results of the final step of the regression analyses are presented for each age group. The proportions of explained variance were .38 for 12-month-olds, .50 for 24-month-olds and .51 for 36-month-old children. Multiple *R* was significantly lower in 12-month-olds than in 24-month-olds ($Z_{\text{dif}} = 2.75$, $p < .01$) and in 36-month-old children ($Z_{\text{dif}} = 2.94$, $p < .01$). Change statistics per block were similar across age groups; R^2 -change ranged from .31 to .44, .04 to .06, and .02 to .03, for respectively child, mother, and family characteristics (all *ps* < .01).

In order to test whether the three age groups showed a similar fit of the regression model, all regression equations were cross-validated in each of the other age groups. The three different regression equations (for each age group) were used to estimate externalizing behaviors at each age. Results of Fisher's *Z*-tests indicated that all equations cross-validated without significant shrinkage, implying that correlations between the estimated scores derived from each regression equation and the true externalizing scores were equal across each of the age groups. Correlations ranged from .58 to .62 in 12-month-olds, from .67 to .71 in 24-month-olds, and from .68 to .71 in 36-month-old children. Moreover, to investigate the sensitivity of the estimated scores with respect to the exact form of the regression equation, estimated scores for externalizing behaviors from all three regression equations were correlated within each age group. Estimated scores from all regression models were similar at each age (all *rs* > .94). When all analyses were repeated for father-reported externalizing behaviors, similar results were obtained.

Discussion and conclusion

The aim of the present study was to investigate externalizing behaviors in 12-month-old children in terms of occurrence, mother-father agreement, 1-year stability, and contextual correlates, and comparing these to externalizing behaviors in 24- and 36-month-old children.

Results showed that externalizing behaviors did occur in 12-month-old children, with some behaviors being reported for more than half of the children in this age group. These findings confirm the

preliminary evidence of the existence of externalizing behaviors in children as young as 12 months of age, as reported by Tremblay et al. (1999) and Carter et al. (2003). However, as expected, the occurrence of almost all externalizing behaviors was significantly lower in 12-month-olds than in the older age groups. This result extends findings by Tremblay et al. (1999) who reported a steep increase in the prevalence of physical aggression between ages 12 and 17 months.

The agreement between mothers and fathers of 12-month-olds regarding externalizing behaviors was significant, albeit lower than in the older children in our sample. This finding may reflect problems in the interpretation of certain behaviors in very young children, resulting in more differences between informants. Our results also showed that the 1-year stability of externalizing behaviors in 12-month-olds was significant, but moderate, and significantly lower than the stabilities found for the 36-month-olds in our study. It is possible that the rapid developmental changes that take place in the second year of life, including language development, the first signs of individuation and autonomy, and the emergence of self-concept (e.g., Sroufe, 1995) result in more change and less continuity of behaviors over time in 12-month-olds compared to preschool children. In addition, parents' specific interpretations of behaviors in 12-month-olds (as suggested above) may influence stabilities in this age group. Nonetheless, the 1-year-stability of externalizing behaviors was significant in the youngest children, showing that the behaviors at that age are at least moderately predictive of future behavior. Additional analyses showed that the interparent agreement and 1-year-stability of 24- and 36-month-olds in our sample was not significantly different from findings reported by other studies of children of that age (Achenbach et al., 1987; Achenbach & Rescorla, 2000; Koot et al., 1997), suggesting that the lower interparent agreement and stability for 12-month-olds was not due to characteristics of our sample or methods.

Our findings showed that the correlates of externalizing behaviors consistently found in preschool children also applied to 12-month-olds. Although subtle age differences were present, the overall model was similar in all age groups. These results give tentative support for the construct validity of externalizing behaviors in 12-month-old children. Externalizing behaviors in 12-month-olds were embedded in the same context as in older children, suggesting similar underlying mechanisms and a similar construct connotation. Nonetheless, some differences between 12- and 24-/36-month-old children were found. Associations with parenting efficacy, parenting daily hassles, and parental educational level were less pronounced in 12-month-old children as compared to older children. The stronger association of externalizing behaviors with parental

educational level may be explained by the different developmental demands regarding caregiving. Anselmi et al. (2004) posited that parents with a higher educational level consider development as a complex process and have greater knowledge of children's developmental needs. In the developmental stage of 12-month-olds, caregiving issues center around responsive availability and providing a secure base, whereas in the older age groups the caregiving role is focused on complex issues, such as firm support and clear roles and values (Sroufe, 1979). Therefore, caregiving qualities of more highly educated parents may be more indispensable in the older age groups, resulting in stronger negative associations with externalizing behaviors. The findings that parenting daily hassles and low parenting efficacy were more strongly associated with externalizing behaviors in older children can result from the different challenges that older children pose to mothers compared to younger children, but may also be due to a longer process of negative parent-child interactions in the case of older children. More parenting stresses and less parenting self-esteem interfere with appropriate parenting, and hence will act upon the development of child behavior problems, which in turn will influence parenting, stress, and self-esteem (Crnic & Greenberg, 1990; Mash & Johnston, 1983). This perpetuating transactional process may result in more pronounced associations after several years of maladaptive caregiving interactions in older as compared to younger children (Campbell, 1995).

The lower proportion of explained variance of the combination of all child, mother, and family correlates in 12-month-olds compared to older children suggests that predictors of externalizing behaviors at this age may consist also of other correlates than the ones studied here. Early predictors that were not assessed in this study, such as insecure attachment and parental sensitivity, as well as factors from innovative research areas, such as genetic factors, might add to the prediction of externalizing behaviors in 12-month-old children (Campbell, 2002). At the same time the less frequent occurrence and shorter history of externalizing behaviors in 12-month-old children may reflect more fluctuating and temporary problems, and as a consequence show less context-embeddedness.

Although this study was the first to extend our knowledge concerning the nature of externalizing behavior in children as young as 12 months old, there were some limitations. The first regards selective sample attrition. Response percentages were moderate at both times of assessment and non-response data were lacking. The moderate response may be due to the large number of questionnaires, the relatively impersonal approach of sending questionnaires by mail, and the fact that participation was voluntary, without payment or reward. Low participation rates may have resulted in an underestimation of the occurrence of externalizing behav-

iors, which precludes conclusions about population prevalence rates, and stability figures. Regarding sample characteristics, parents with low educational levels were underrepresented, as were families from non-Dutch ethnic backgrounds (exclusion criterion in consideration of the intervention phase). Considering previous findings that low socioeconomic status is related to higher levels of externalizing problems (Achenbach & Rescorla, 2000; Koot et al., 1997), this may have resulted in underestimations of the occurrence of externalizing behaviors. Nevertheless, since we corrected for differences between age groups regarding parental educational level, the age differences in occurrence can not be ascribed to this variable. Further, it is unlikely that interparent agreement and stability are affected by parental educational level, since results for the oldest children in our sample were very similar to those found in other, more representative samples. In addition, sample characteristics are not likely to have influenced results concerning age differences in associated factors. A second limitation is the fact that mothers were the only informants of the child, mother, and family correlates. We do not know whether contextual variables, especially the ones that are not objectively quantifiable, reflect the real context of the child's externalizing behavior. Parents who notice or report externalizing behaviors of their child may be more inclined to report other problems as well. Nevertheless, associations were also found when father-reported externalizing behaviors were related to mother-reported context characteristics.

Despite its limitations, our study may provide the incentive for further investigations of externalizing behaviors in 12-month-old children. Salient issues include parents' interpretations of certain problem behaviors in this age group, the long-term stability of externalizing behaviors, and the association with internalizing behaviors at this young age. Additional research may also shed further light on the concept of externalizing behavior at this age by investigating other correlates than the ones studied here, using multiple informants for both externalizing behaviors and contextual correlates, including observational data, and studying the influence of correlates in a longitudinal perspective. The findings from the present study suggest that the preschool CBCL may be particularly useful to investigate these issues. Finally, this study points to the relevance of exploring the usefulness of preventive interventions of externalizing behaviors in 12-month-old children.

Acknowledgements

This study is part of the research project 'Screening and Intervention of Problem behavior in Toddlerhood' (SCRIPT), conducted at the Centre for Child and Family Studies, Leiden University, the Netherlands. The study is supported by grant 2200.0097

from Zorg Onderzoek Nederland [Netherlands Organization for Health Research and Development] to Marinus H. van IJzendoorn and Femmie Juffer.

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Manuscript accepted 15 November 2005